ELM PARK WATER SYSTEM (PWS 5420020)
SOURCE WATER ASSESSMENT FINAL REPORT

July 16, 2001

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for the Elm Park Water System, Twin Falls, Idaho,* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Elm Park (PWS 5420020) drinking water system consists of one ground water well. A check of the Idaho Drinking Water Information Management System (DWIMS) revealed past drinking water quality information for the Elm Park drinking water system. No volatile organic compounds (VOCs) or microbial contaminants were detected in the Elm Park well water.

In January 1996, the inorganic chemicals (IOCs) arsenic, barium, and selenium were detected in a water sample collected from the Elm Park well at concentrations of 0.004 milligrams per liter (mg/l), 0.02 mg/l, and 0.008 mg/l, respectively. The barium and selenium detections were well below their respective Maximum Contaminant Levels (MCLs) of 2.0 mg/l for barium and 0.05 mg/l for selenium. The arsenic detection was also well below the current MCL of 0.05 mg/l for arsenic. The Safe Drinking Water Act requires the United States Environmental Protection Agency (EPA) to revise the current MCL for arsenic. In January 2001, EPA published a new standard for arsenic in drinking water that requires public water supplies to reduce arsenic to 0.01 mg/l by 2006. EPA is reviewing this standard so that communities that need to reduce arsenic in drinking water can proceed with confidence that the new standard is based on sound science and accurate cost estimates. Arsenic, barium, and selenium may be naturally occurring chemicals in the formations in which the Elm Park well was developed.

From April 1995 to January 2001, nitrate levels detected in the Elm Park well water ranged from 0.96 mg/l to 4.8 mg/l for seven samples. The highest concentration of nitrates detected in the Elm Park well is 48% of the MCL for nitrate, 10 mg/l. In September 2000, the synthetic organic chemical (SOC), Di (2-ethylhexyl), phthalate was detected in a water sample collected from the Elm Park well at a concentration of 0.6 micrograms per liter (µg/l). The MCL for Di (2-ethylhexyl) phthalate is 6.0 µg/l. Split confirmation samples, however, did not detect the contaminant.

A Sanitary Survey conducted in 2000 found that the Elm Park drinking water system required a number of improvements in order to comply with current PWS regulations. In terms of total susceptibility, the Elm Park well water rated high for susceptibility to IOC, VOC, SOC, and microbial contaminants. The presence of multiple potential sources of contamination in the delineated source water assessment area, aquifer properties, well construction and maintenance, high countywide farm chemical use, and the presence of a nitrate priority area and an organics priority area for pesticides contributed to the overall ratings for the Elm Park well.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the Elm Park drinking water system, source water protection activities should first focus on correcting the deficiencies outlined in the 2000 Sanitary Survey, if these deficiencies have not been corrected. Since historical nitrate detections in the Elm Park well water approach 50% of the MCL, Elm Park should investigate various

systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat nitrates. Practices aimed at reducing or preventing the leaching of chemicals into the soil should be investigated and implemented. Any spills from the identified potential contaminant sources in the source water assessment area should be monitored carefully.

Most of the source water protection designated area is outside the direct jurisdiction of Elm Park. The City of Twin Falls is implementing a Source Water Protection policy that could be used for Elm Park. Also, Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside of the direct jurisdiction of Elm Park. Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR ELM PARK, TWIN FALLS, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

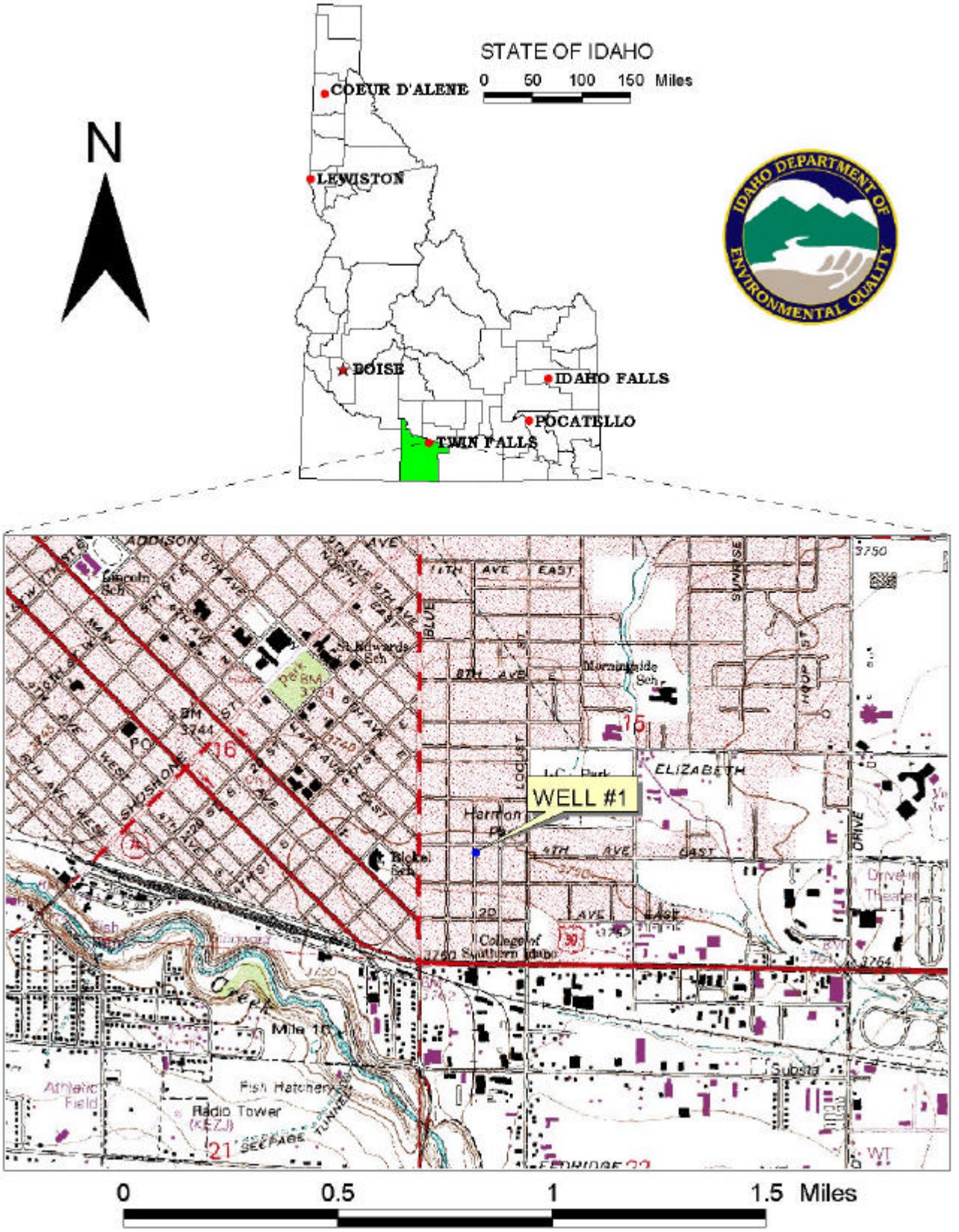
Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

FIGURE 1. Geographic Location of Elm Park Water System



Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Elm Park drinking water system is a community system composed of one groundwater well, serving approximately 120 people through 48 connections. The system is located in Twin Falls, Idaho, south of Harmon Park and north of Rock Creek (Figure 1).

Nitrates represent the only major water chemistry issue for the Elm Park drinking water system. From April 1995 to January 2001, nitrate concentrations detected in the Elm Park well water ranged from 0.96 mg/l to 4.8 mg/l for seven samples. The highest concentration of nitrates detected in the Elm Park well water approach 50% of the MCL for nitrate, 10 mg/l. Single detections of arsenic, barium, and selenium, well below the MCLs for these chemicals, were recorded for the Elm Park well in January 1996. In September 2000, Di (2-ethylhexyl) phthalate was detected in the Elm Park well water at a concentration far below the MCL, but was not detected in the repeat sample.

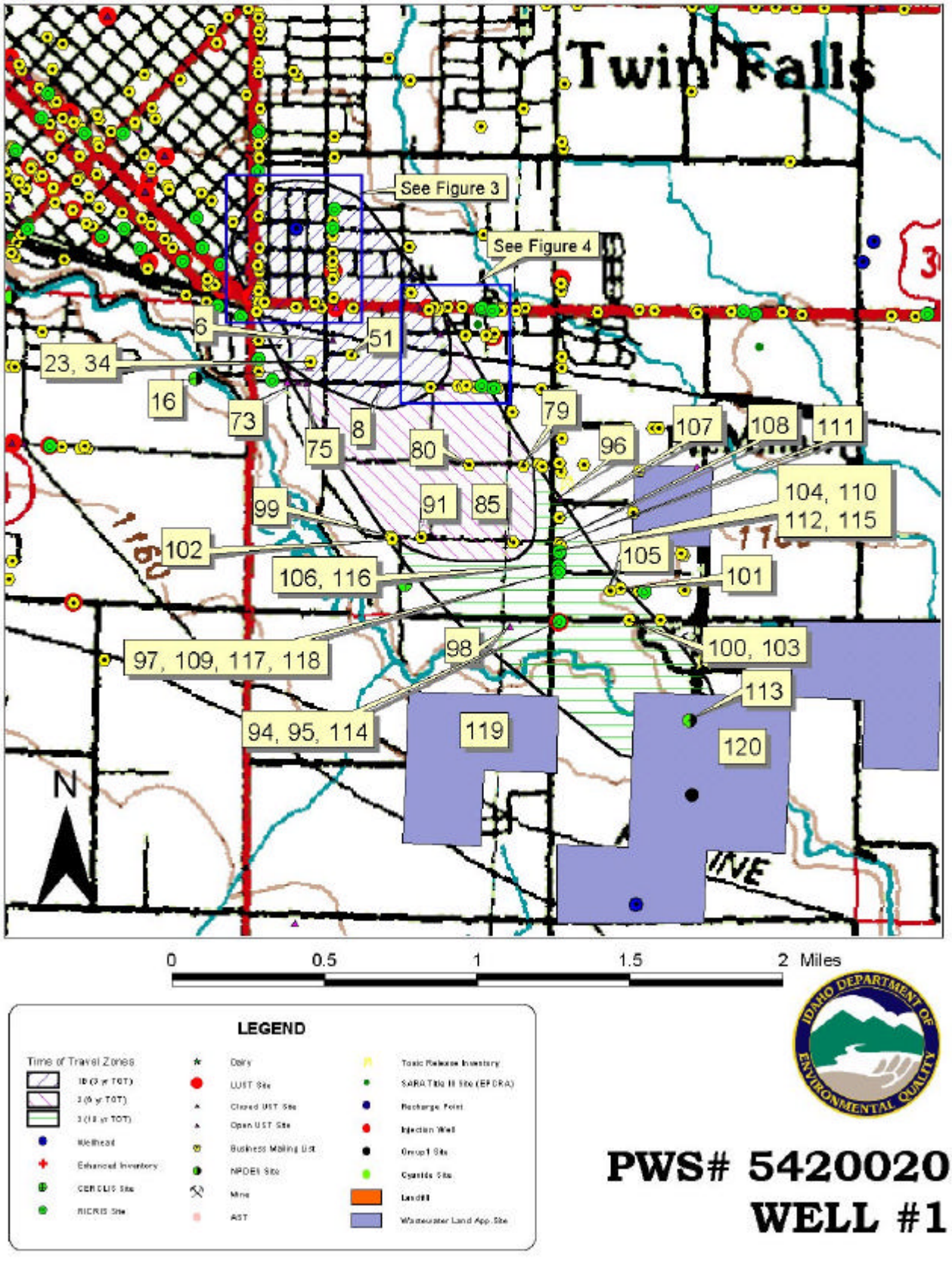
Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Snake River Plain Aquifer in the vicinity of Twin Falls. The computer model used site specific data, assimilated by DEQ from a variety of sources including Elm Park well logs, other local area well logs, and hydrogeologic reports summarized below.

The Elm Park well likely extracts water from two aquifers, a perched aquifer and the Banbury Basalt. The Banbury Basalt overlies the Idavada Volcanics. The Idavada Volcanics unit consists of welded ash and tuff, rhyolite, and some basalt flows. The Idavada Volcanics are up to 2,000 feet thick in the Twin Falls area and contain fractures and columnar joints, allowing some mixing of the geothermal groundwater in the Idavada Volcanics with groundwater in the Banbury Basalt (Lewis and Young, 1989). The Banbury Basalt is of variable thickness and is the primary non-geothermal aquifer in the Twin Falls area (Moffat and Jones, 1984). Basalt flows fracture at the surface as they cool. The fractures occur in the horizontal direction throughout the flow. The Banbury Basalt is fractured and contains thin sedimentary interbeds. These fractures and sedimentary interbeds comprise the water producing zones in the Banbury Basalt (Cosgrove, et al., 1997). A perched aquifer above the Banbury Basalt extends from Buhl east to Twin Falls. This aquifer occurs in quaternary basalt and alluvial deposits (Moffat and Jones, 1984). Regional ground water flow is to the north, but may vary with proximity to major creeks and the Snake River (Lewis and Young, 1989).

The delineated source water assessment area for the Elm Park well can best be described as a corridor approximately 0.5 miles wide and 2.5 miles long extending to the southeast, roughly parallel to Rock Creek (Figure 2). The actual data used by DEQ in determining the source water assessment delineation area is available upon request.

Figure 2. Elm Park Water System Delineation Map and Potential Contaminant Source Locations



Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside Elm Park wellhead area is urban (commercial, industrial, residential) with agricultural land use located east and south of the delineated source water assessment area. Land use within the immediate area of the wellhead is urban.

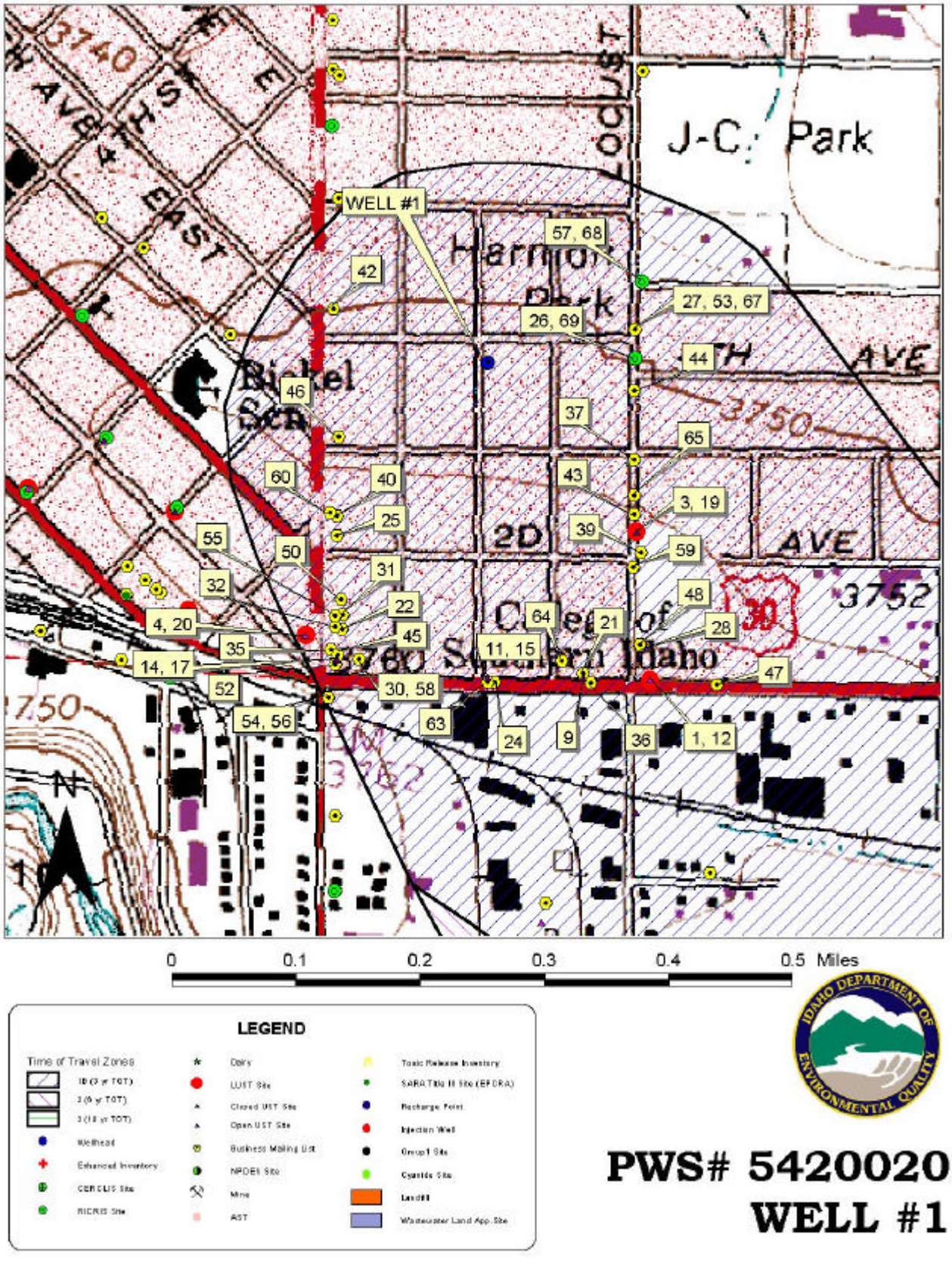
It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted during April 2001. This process involved identifying and documenting potential contaminant sources within Elm Park Source Water Assessment area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The delineated source water area for the Elm Park well contains 123 potential contaminant sources, 71 of them within the 3-year time of travel (Table 1, Attachment A). Figures 2, 3, and 4 show the locations of these various potential contaminant sites relative to the wellhead.

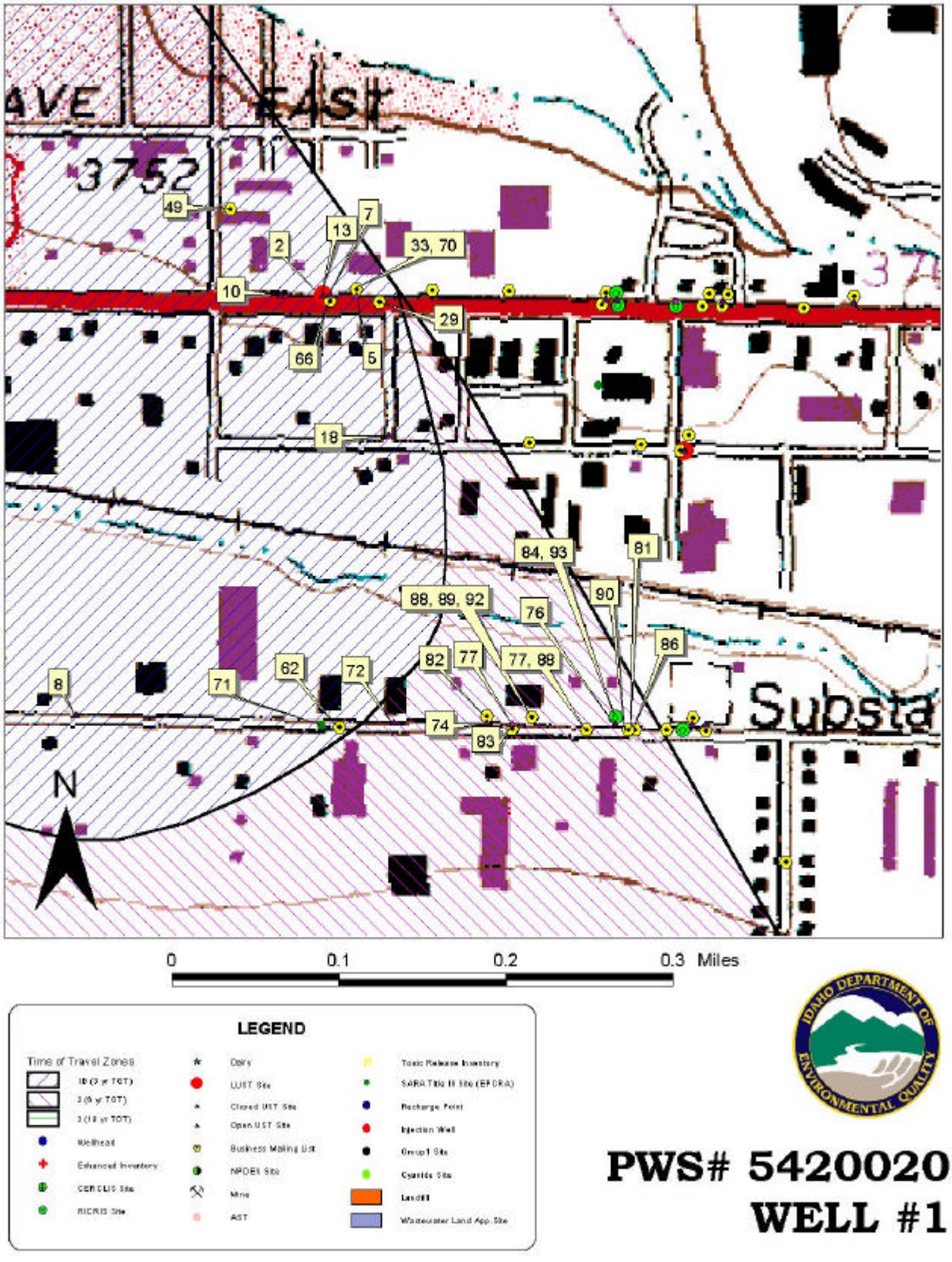
Highway 30 and the Union Pacific Railroad represent potential sources of contamination because they are transportation corridors. Accidental releases of contaminants on these corridors, within the source water assessment area, could spill IOCs, VOCs, SOCs, or microbial contaminants on to the well-drained soil. These potential contaminants could migrate down through the fractured basalt in the vadose zone and possibly contaminate the Elm Park source water. Similarly, Rock Creek is listed as a potential contaminant source because leakage from surface waters in the source water assessment area is known to recharge the perched aquifer and the Banbury Basalt aquifer (Cosgrove, et al., 1997). Consequently, if a spill occurs and contaminants are transported through the source water assessment area by Rock Creek, contaminants could leach into the Elm Park source water.

Figure 3. Elm Park Water System Delineation Map and Potential Contaminant Source Locations



PWS# 5420020
WELL #1

Figure 4. Elm Park Water System Delineation Map and Potential Contaminant Source Locations



Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

Hydrologic sensitivity was high for the Elm Park drinking water well (Table 2). This reflects the nature of the soils being in the moderately-drained to well-drained class, the vadose zone (zone from land surface to the water table) being made predominantly of fractured basalt, first ground water being located within 300 feet of ground surface, and a lack of at least 50 cumulative feet of low permeability units (aquitard) that could retard downward movement of contaminants. The absence of an aquitard coupled with the soil and vadose zone properties of the Elm Park well allow for the downward migration of potential contaminants. The shallow depth to water decreases the potential for downward migrating contaminants to degrade (attenuate) through adsorption or other mechanisms.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. The Elm Park drinking water system consists of one well that extracts ground water for domestic uses. The well system construction susceptibility score was high for the Elm Park well (Table 2). A Sanitary Survey for the system, conducted in 2000, listed several needed improvements for the Elm Park well in order to comply with wellhead and surface seal standards. The Sanitary Survey determined that the well seal might not adequately protect the well water from contamination in the event the subsurface basement flooded. The Sanitary Survey also noted that the wellhead requires a properly installed, downturned and screened vent tube. Additionally, the Sanitary Survey discovered that the sampling tap does not have a vacuum breaker. The Elm Park well is located outside the 100-year floodplain.

No well log was available for the Elm Park well. Consequently, it was not possible to determine whether or not the well meets current IDWR standards. The IDWR Well Construction Standards Rules (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the Recommended Standards for Water Works (1997) during construction. Under current standards, all PWS wells are required to have a 50 foot buffer around the wellhead. Current standards require 0.280-inch thick walls for 6-inch diameter casing, as listed in the Recommended Standards for Water Works (1997). The 2000 Sanitary Survey instructed that no fertilizers, herbicides, or pesticides should be stored or applied within 50 feet of the wellhead.

Potential Contaminant Sources and Land Use

The Elm Park well water rated high for susceptibility to potential IOC (e.g., nitrates) and SOC (e.g., pesticides) contamination. Urban land use, the presence of a nitrate priority area and an organics priority area (pesticides), high countywide farm chemical use, and the presence of multiple potential contaminant sources within the delineated source water assessment area contributed to the ratings. The Elm Park well water rated on the high end of moderate for susceptibility to potential VOC (e.g., petroleum products) contamination. Urban land use and the presence of multiple potential VOC contaminant sources within the delineated source water assessment area contributed to the rating. The Elm Park well water rated low for susceptibility to potential microbial contamination (Table 2). This rating is due to the fact that potential microbial contaminant sources in the delineated source water area are less numerous than for IOCs, VOCs, and SOCs. Table 1 (Attachment A) lists

the potential contaminant sources in the delineated source water area for the Elm Park well. The locations of potential contaminant sources for the Elm Park well are shown on Figures 2-4.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL or a detection of a VOC or SOC at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and a large percentage of agricultural land contribute greatly to the overall ranking. The presence of a nitrate priority area and an organics priority area also contributes to the overall ranking. In terms of total susceptibility, the Elm Park drinking water well rated high for susceptibility to potential IOC, VOC, SOC, and microbial contamination (Table 2). Urban land use, high countywide farm chemical use, the presence of a nitrate priority area and an organics priority area for pesticides, aquifer properties, well construction, and the presence of multiple potential sources of contamination in the delineated source water assessment area contributed to the overall ratings for the Elm Park well.

Table 2. Summary of Elm Park Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	H	M	H	L	H	H	H	H	H

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

A nitrate priority area and an organics priority area (for pesticides) cross the delineated source water area of the Elm Park well. Countywide farm chemical use is considered high, and the delineated source water area for the Elm Park well is surrounded by a significant amount of urban land use. Aquifer properties make the source water highly susceptible to migrating contaminants, and little is known about the well construction. Additionally, multiple potential sources of contamination exist in the delineated source water area for the Elm Park well.

Nitrates represent the only major water chemistry issue for the Elm Park drinking water system. From April 1995 to January 2001, nitrate concentrations detected in the Elm Park well water ranged from 0.96 mg/l to 4.8 mg/l for seven samples. The highest concentration of nitrates detected in the Elm Park well water approach 50% of the MCL for nitrate, 10 mg/l. Single detections of arsenic, barium, and selenium, well below the MCLs for these chemicals, were recorded for the Elm Park well in January 1996. In September 2000, Di (2-ethylhexyl) phthalate was detected in the Elm Park well water at a concentration far below the MCL, but was not detected in the subsequent repeat sample.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies.

For the Elm Park drinking water system, source water protection activities should first focus on correcting the deficiencies outlined in the 2000 Sanitary Survey, if these deficiencies have not been corrected. Since historical nitrate detections in the Elm Park well water approach 50% of the MCL, Elm Park should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat nitrates. Practices aimed at reducing or preventing the leaching of farm chemicals into the soil should be investigated and implemented. Elm Park could also investigate the feasibility of connecting to the City of Twin Falls and eliminating the existing source.

Elm Park should also be diligent about local businesses listed with potential IOC, VOC, SOC, or microbial contaminants. Any spills from the potential contaminant sources in the delineated capture zone should be monitored carefully. Any surface releases should be monitored to prevent contaminants from infiltrating to the ground water producing zones. The highly fractured nature of the basalt aquifer could lead to cross-contamination from shallower fractures to deeper fractures depending on well construction.

Most of the source water protection designated area is outside the direct jurisdiction of Elm Park. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside of the direct jurisdiction of Elm Park. Partnerships with state and local agencies and industry groups should be established and are critical to success. Continued vigilance in keeping the wells protected from surface flooding can also keep the potential for contamination reduced. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office (208) 736-2190

State DEQ Office (208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1–800–962–3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as "Superfund" is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Attachment A

Elm Park
Potential Contaminant Source Table

Table 1. Elm Park Well, Potential Contaminant Inventory

Site #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
1	LUST[3], Site Cleanup Incomplete , Impact: Ground Water	0-3	Database Search	VOC, SOC
2	LUST, Site Cleanup Completed , Impact: Unknown	0-3	Database Search	VOC, SOC
3	LUST, Site Cleanup Completed , Impact: Unknown	0-3	Database Search	VOC, SOC
4	LUST, Site Cleanup Completed , Impact: Unknown	0-3	Database Search	VOC, SOC
5	UST[4], Gas Station; Open	0-3	Database Search	VOC, SOC
6	UST, Construction; Closed	0-3	Database Search	IOC, VOC, SOC
7	UST, Not Listed; Closed	0-3	Database Search	VOC, SOC
8	UST, Commercial; Closed	0-3	Database Search	VOC, SOC
9	UST, Gas Station; Closed	0-3	Database Search	VOC, SOC
10	UST, Commercial; Closed	0-3	Database Search	VOC, SOC
11	UST, Gas Station; Closed	0-3	Database Search	VOC, SOC
12	UST, Gas Station; Open	0-3	Database Search	VOC, SOC
13	UST, Truck Rental; Closed	0-3	Database Search	VOC, SOC
14	UST, Commercial; Closed	0-3	Database Search	VOC, SOC
15	UST, College of Southern Idaho; Closed	0-3	Database Search	VOC, SOC
16	UST, Waste Systems; Open	0-3	Database Search	ICO, VOC, SOC, Microbes
17	UST, Not Listed; Closed	0-3	Database Search	VOC, SOC
18	UST, Truck/Transporter; Closed	0-3	Database Search	VOC, SOC
19	UST, Auto Dealership; Closed	0-3	Database Search	VOC, SOC
20	UST, Commercial; Open	0-3	Database Search	VOC, SOC
21	Automobile Dealers	0-3	Database Search	VOC, SOC
22	Transmissions-Automobile Repair	0-3	Database Search	IOC, VOC, SOC
23	Feed Concentrates & Supplements	0-3	Database Search	IOC, SOC, Microbes
24	Mobile Homes-Repairing & Service	0-3	Database Search	IOC, VOC, SOC
25	Commercial Printing	0-3	Database Search	IOC, VOC
26	Automobile Repairing & Service	0-3	Database Search	IOC, VOC, SOC
27	Welding	0-3	Database Search	IOC, VOC, SOC
28	Electric Equipment & Supplies	0-3	Database Search	IOC
29	Culvert Construction	0-3	Database Search	IOC, VOC
30	General Contractors	0-3	Database Search	IOC, VOC, SOC
31	Water Treatment Equip Service & Supplies	0-3	Database Search	IOC, VOC, SOC
32	Automobile Renting & Leasing	0-3	Database Search	VOC, SOC
33	Service Stations-Gasoline & Oil	0-3	Database Search	VOC, SOC
34	Feed Concentrates & Supplements	0-3	Database Search	IOC, VOC, Microbes
35	Automobile Dealers	0-3	Database Search	VOC, SOC
36	Welding Equipment & Supplies	0-3	Database Search	IOC, VOC, SOC
37	Home Improvements	0-3	Database Search	IOC, VOC, SOC
38	Contractors	0-3	Database Search	IOC, VOC, SOC
39	Grain Elevators-Equip & Supplies	0-3	Database Search	IOC, VOC, SOC
40	Canvas Goods-Manufacturers	0-3	Database Search	VOC
41	Laundries	0-3	Database Search	VOC
42	Tire-Dealers-Retail	0-3	Database Search	IOC, VOC, SOC
43	Tile-Ceramic-Contractors & Dealers	0-3	Database Search	IOC, VOC
44	Race Tracks	0-3	Database Search	IOC, VOC, SOC
45	Lawn Mowers-Sharpening & Repairing	0-3	Database Search	IOC, VOC, SOC

Site #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
46	Service Stations-Gasoline & Oil	0-3	Database Search	VOC, SOC
47	Automobile Parts & Supplies-Retail	0-3	Database Search	IOC, VOC, SOC
48	Storage-Household & Commercial	0-3	Database Search	IOC, VOC, SOC, Microbes
49	Plumbing Fixtures & Supplies	0-3	Database Search	IOC, VOC, SOC
50	Tire-Dealers-Retail	0-3	Database Search	IOC, VOC, SOC
51	Automobile Racing Car Equipment	0-3	Database Search	IOC, VOC, SOC
52	Carpet & Rug Cleaners	0-3	Database Search	IOC, VOC, SOC
53	Roofing Contractors	0-3	Database Search	IOC, VOC, SOC
54	Automobile Body Shop	0-3	Database Search	IOC, VOC, SOC
55	Automobile Repairing & Service	0-3	Database Search	IOC, VOC, SOC
56	Sheet Metal Work Contractors	0-3	Database Search	IOC, VOC, SOC
57	Prepared Fresh-Frozen Fish/Seafood	0-3	Database Search	IOC, VOC, Microbes
58	Storage-Household & Commercial	0-3	Database Search	IOC, VOC, SOC, Microbes
59	Storage-Household & Commercial	0-3	Database Search	IOC, VOC, SOC, Microbes
60	Car Washing & Polishing	0-3	Database Search	IOC, VOC, SOC
61	Farm Equipment-Manufacturers	0-3	Database Search	IOC, VOC, SOC
62	Storage-Household & Commercial	0-3	Database Search	IOC, VOC, SOC, Microbes
63	Tile-Ceramic-Contractors & Dealers	0-3	Database Search	IOC, VOC
64	Commercial Printing	0-3	Database Search	IOC, VOC
65	Automobile Repairing & Service	0-3	Database Search	IOC, VOC, SOC
66	Truck-Repairing & Service	0-3	Database Search	IOC, VOC, SOC
67	Rental Service	0-3	Database Search	IOC, VOC, SOC
68	Food Distributors	0-3	Database Search	IOC, VOC, Microbes
69	Equipment Company	0-3	Database Search	IOC, VOC, SOC
70	Gasoline Service Station	0-3	Database Search	VOC, SOC
71	Farm Machinery and Equipment	3-6	Database Search	IOC, VOC, SOC
72	UST, Truck/Transporter; Closed	3-6	Database Search	IOC, VOC, SOC
73	UST, Not Listed; Closed	3-6	Database Search	VOC, SOC
74	UST, Commercial; Closed	3-6	Database Search	VOC, SOC
75	UST, Commercial; Closed	3-6	Database Search	VOC, SOC
76	UST, Industrial; Closed	3-6	Database Search	IOC, VOC, SOC
77	UST, Truck/Transporter; Open	3-6	Database Search	IOC, VOC, SOC
78	Tractor-Repairing & Service	3-6	Database Search	IOC, VOC, SOC
79	Excavating Contractors	3-6	Database Search	IOC, VOC, SOC
80	Underground Wire & Cable Laying Co	3-6	Database Search	IOC
81	Truck-Repairing & Service	3-6	Database Search	IOC, VOC, SOC
82	Service Station Equipment	3-6	Database Search	IOC, VOC, SOC
83	Trucking-Motor Freight	3-6	Database Search	IOC, VOC, SOC
84	Scrap Metals-Processing/Recycling	3-6	Database Search	IOC, VOC, SOC
85	Roofing Contractors	3-6	Database Search	IOC, VOC, SOC
86	Lawn Maintenance	3-6	Database Search	IOC, VOC, SOC
87	Buildings-Metal	3-6	Database Search	IOC, VOC, SOC
88	Delivery Service	3-6	Database Search	VOC, SOC
89	General Contractors	3-6	Database Search	IOC, VOC, SOC
90	Trailers-Repairing & Service	3-6	Database Search	IOC, VOC, SOC
91	Truck Equipment & Parts-Used	3-6	Database Search	IOC, VOC, SOC
92	Woodworkers	3-6	Database Search	IOC, VOC, SOC

Site #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
93	Metal Recycling	3-6	Database Search	IOC, VOC, SOC
94	LUST, Site Cleanup Completed , Impact: Unknown	6-10	Database Search	VOC, SOC
95	UST, Industrial; Closed	6-10	Database Search	VOC, SOC
96	UST, Other; Closed	6-10	Database Search	VOC, SOC
97	UST, Industrial; Closed	6-10	Database Search	VOC, SOC
98	UST, Truck/Transporter; Open	6-10	Database Search	IOC, VOC, SOC
99	Car Washing & Polishing	6-10	Database Search	IOC, VOC, SOC
100	Delivery Service	6-10	Database Search	VOC, SOC
101	Automobile Restoration	6-10	Database Search	IOC, VOC, SOC
102	Automobile Parts	6-10	Database Search	IOC, VOC, SOC
103	Meat Products Supply	6-10	Database Search	IOC, VOC, Microbes
104	Automobile Body	6-10	Database Search	IOC, VOC, SOC
105	Seeds & Bulbs	6-10	Database Search	IOC, VOC, Microbes
106	Seeds & Bulbs	6-10	Database Search	IOC, VOC, Microbes
107	Bottlers	6-10	Database Search	IOC, VOC
108	Automobile Repairing & Service	6-10	Database Search	IOC, VOC, SOC
109	Fertilizer Mixing Only	6-10	Database Search	IOC, VOC, SOC, Microbes
110	Water Treatment Equip	6-10	Database Search	IOC, VOC, SOC
111	State Government-Transportation Program	6-10	Database Search	IOC, VOC, SOC
112	Truck Equipment & Parts	6-10	Database Search	IOC, VOC, SOC
113	Sugar Processing Discharge	6-10	Database Search	IOC, VOC, Microbes
114	Sugar Beat Processing	6-10	Database Search	IOC, VOC, Microbes
115	Automobile Body Shop	6-10	Database Search	IOC, VOC, SOC
116	Seeds & Bulbs	6-10	Database Search	IOC, VOC, Microbes
117	Fertilizer Mixing Only	6-10	Database Search	IOC, VOC, SOC, Microbes
118	Farm Chemicals	6-10	Database Search	IOC, VOC, SOC, Microbes
119	Meat Processor	6-10	Database Search	IOC, VOC, Microbes
120	Sugar Beet Waste	6-10	Database Search	IOC, VOC, Microbes
	Highway 30	0-3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	0-3, 3-6	GIS Map	IOC, VOC, SOC, Microbes
	Rock Creek	6-10	GIS Map	IOC, VOC, SOC, Microbes

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
[3] LUST = leaking underground storage tank
[4] UST = underground storage tank

Attachment B

Elm Park
Susceptibility Analysis
Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name :ELM PARK WATER SYSTEM Well# : WELL #1 Public Water System Number 5420020 5/29/01 3:15:43 PM

1. System Construction		SCORE				
Drill Date	12/31/1920					
Driller Log Available	NO					
Sanitary Survey (if yes, indicate date of last survey)	YES	2000				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	NO	1				
Casing and annular seal extend to low permeability unit	NO	2				
Highest production 100 feet below static water level	NO	1				
Well located outside the 100 year flood plain	YES	0				
Total System Construction Score		5				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	NO	2				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
Total Hydrologic Score		6				
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN	2	2	2	2	
Farm chemical use high	YES	2	0	2		
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	YES	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	48	71	62	11	
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8	
Sources of Class II or III leacheable contaminants or	YES	24	33	32		
4 Points Maximum		4	4	4		
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0	
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone 1B		14	12	14	8	
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	YES	2	2	2		
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
Land Use Zone II	Less than 25% Agricultural Land	0	0	0		
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0	
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	YES	1	1	1		
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0		
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0	
Cumulative Potential Contaminant / Land Use Score		23	19	23	10	
4. Final Susceptibility Source Score		16	15	16	15	
5. Final Well Ranking		High	High	High	High	